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AUTHOR Sears, Joyce R.
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ABSTRACT

The hypothesis that there would be a significant difference in correct responses between a group of junior college retarded readers seeing words in context and another seeing isolated words in favor of the words-in-context group was investigated. A group of 42 retarded readers enrolled in reading and writing classes of the academic skills lab in Mercer County Community College, Trenton, New Jersey, was randomly divided into two groups. A preliminary administration of the Gates-MacGinitie vocabulary and comprehension tests was given to assure that there was no significant difference in reading levels of the two groups. An experimenter-devised trial test was given to 17 eighth-grade students in which the context groups scored 61.5 percent and the isolated word group, 50.8, which was a significant difference. On the 12-item experimenter-devised test for the junior college subjects, the context group responded correctly to 47.6 percent of the items and the isolated word group to 49.2 percent, with means of 4.26 and 4.40, respectively. It was therefore concluded that junior-college retarded readers do not use context to gain word meaning. Suggestions for further research, the experimental tests, tables, and a bibliography are included. (BM)

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JUNIOR-COLLEGE RETARDED READERS' USE OF CONTEXT TO GAIN WORD MEANING

A THESIS

SUBMITTED TO THE FACULTY

OF THE GRADUATE SCHOOL OF EDUCATION

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JOYCE R. SEARS

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APPROVED: Phillip Shaw

Frederick B. Davis

Josephine B. Paul

DEAN: _____

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ABSTRACT

No studies have been reported on junior-college retarded readers' use of context to gain word meaning from a written passage. As more retarded readers enter community colleges through "open-admissions" policies, the need for such information exists.

This study attempted to answer the question: Do junior-college retarded readers use context to get word meaning to any significant degree? The hypothesis set forth was that there would be a significant difference in correct responses between a group seeing words in context and another group seeing words in isolation; that the word-in-context group would identify more words correctly.

Forty-two students enrolled in reading and writing classes of an academic skills lab in an urban community college were randomly assigned to two groups. Each group was given a 12-item test, one test asking for meanings of words in passages and the other for meanings of words without any context.

The context group responded correctly to 47.6 percent of the test items, with a mean score of 4.26; while the word group answered 49.2 percent correctly, with a mean score of 4.40. The context group did not score as high as did the word group, although the difference between mean scores of the two groups was not significant.

The major finding of this study was that this group of junior-college retarded readers did not use context to gain word meaning; in fact, use of context lowered their word identification scores, though not significantly.

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CHAPTER I

THE PROBLEM

Background of the Problem

Comprehension is fundamental to reading. This means that words must be assigned meaning, and meaning shifts from context to context, from individual to individual. The context in which words occur as well as the past experiences of the reader determine meaning. Investigators have examined the use of context clues by elementary school children, by adolescents generally, and by college and graduate students. In each of these, both the reading ability and the years of experiences fall roughly into the same categories: high, middle, and low.

But no studies have been done to ascertain the extent and significance of the older retarded reader's use of context clues to gain word meaning from a written passage. He is low in reading ability and high in years of experience. Indeed, there is a question of whether this type of reader even uses the context at all.

Older students (adults) who are retarded in reading have needs different from those of children learning to read. Similarly, retarded readers who are mature have

needs different from those of good readers who are mature. Research offerings on the older, or mature, retarded reader are incomplete. As more of these readers find their ways into instructional situations with the expansion of community colleges and "open-admissions" policies, the need for such information clearly exists.

Statement of the Problem

This study sought information about junior-college retarded readers; specifically, it investigated their use of context in reading to determine whether these readers assign meanings of words better when the words are shown in context or without any context. In context situations the precise cognitive processes used to get meaning are covert and difficult to determine; the final selection of meaning given to the unknown word, however, does offer the investigator some insight into these readers' word-meaning abilities and their subsequent ability to comprehend, or failure to comprehend, the thought of a passage.

This study, then, attempted to find out whether junior-college retarded readers use context clues to any significant degree. To investigate that topic, this specific question was posed: Do junior-college retarded readers identify more words correctly when words are seen in context than when the same words are seen without any context?

To answer the above question, the study examined the responses of two randomly chosen groups of junior-college retarded readers to a selected list of words, one group seeing the words alone and the other the same words within a passage. The difference between the two groups in the number of words correctly identified was compared to see whether or not there was any significant difference between the word-in-context group and the word-in-isolation group.

The following hypotheses were proposed:

1. The word-in-context group would identify more words correctly than the word-in-isolation group.

2. There would be a significant difference in correct responses between a group seeing words in context and another group seeing words alone.

Definition of Terms

Junior-college retarded readers. Individuals, over 18 years of age, in a community college, who are reading between fifth- and eleventh-grade level.

Context clue. An aid to discovering the meaning of an unknown word within a passage.

Inference clue. An aid in the passage which provides logical evidence for selecting a particular meaning.

Limitations of the Study

The following limitations should be considered regarding any conclusions drawn from this study.

The sample population was small and was drawn from students in one community college in New Jersey. These students were required to take reading improvement in an academic skills lab; enrollment was based on failure to meet minimal requirements for college entrance. Results of the study describe only students over 18 years of age, in an urban setting, who had to enroll in a course as a prerequisite for junior college matriculation.

The testing instrument evaluated use of only one kind of context clue, that which required the reader to infer meaning from the whole text or passage and demanded complex thinking processes. Total ability to use context clues cannot be generalized beyond this use of inference clues.

All testing was done by one investigator.

I.Q. scores were not available for the subjects.

Overview of the Study

The next chapter of this study surveys the literature in the subject of context clues in three subsections: (1) the influence of context on meaning, (2) classifications of context clues, and (3) students' use of context to get meaning from a passage. Five studies are described,

with two saying that low-level readers and older students do use the context to get word meaning, and three suggesting that they do not.

Chapter III describes the procedures followed in the study: the junior college subjects--their description, selection, and assignment to groups; the word-in-context and word-in-isolation tests--the method of text construction and selection; a trial test; the final test administration; and finally, the statistical plan used to determine whether or not there was any significant difference between the scores of the word-in-context and word-in-isolation groups.

Chapter IV contains tables, along with discussion and possible explanation of results, and includes the following: the word-in-context and word-in-isolation groups' vocabulary, comprehension, and word-identification scores; both groups' responses to individual items and total responses on the word-identification test; and the difference between word-identification mean scores of the two groups. The hypotheses set forth in Chapter I were that there would be a significant difference between the two groups, and that the context group would score higher. The rejection of both hypotheses is discussed, explained, and related to other studies of student use of context.

The last chapter summarizes the findings of the

study, offers tentative conclusions to the above-mentioned hypotheses, and makes suggestions for further research in the area of context clues and junior-college retarded readers.

CHAPTER II

REVIEW OF THE LITERATURE

Since this study investigated getting meaning from context, discussion of the literature begins with how different writers view the function of context and its influence on word meaning. The second section describes context clue classifications found in the literature, for this study involved ability to infer meaning from the text of a passage, and inference is a categorized clue.

Not found in the literature are any studies specifically about junior-college retarded readers' use of context. Yet because these junior-college students' reading levels are low, section three presents three studies of how other low-level readers (i.e., children) use context. Also, because these students' maturity-level, or age, is high, two studies done with older students were reviewed. It is interesting to note the differing results of these investigations, as well as their different designs. This study somewhat resembled one of those reviewed.

The Influence of Context on Meaning

A writer's meaning must make sense to a reader. How much sense will vary, depending on how precisely the words of a passage are understood. Thorndike's (1934) word classification stresses the importance of verbal context in gaining meaning, as he describes (1) words which usually have the same meaning; (2) words that have several distinct meanings, with the one intended determined by context; (3) words whose meanings fluctuate, with fine shades of meaning dependent on context and reader experience; and (4) words so varied that their meaning must be grasped through the meaning of the total context. This dependence of word meanings on context is rephrased by Richards (1936) as a scale extending from "stable positions" to "movement among meanings [p. 48]."

Variations of word meanings prompt Gray (1952) to discuss "types of meaning" in efficient reading. Gray's "types" rely on immediate verbal context and reader experience. These "types" include (1) literal meaning, varying with the passage itself and the background of the reader; (2) related meaning, expanding the literal meaning with what a reader already knows; (3) implied meaning, which is not actually stated but has to be inferred by the reader from what the author says in the selection; and (4) evaluative meaning, which suggests

thoughtful reaction or inquiry by the reader toward a passage.

Context is defined by Good (1959) as the

> textual material in which a particular word, phrase, or statement is found . . . by extension of meaning, the environment or particular circumstances in which anything occurs or is found [p. 126].

Context can provide associations for the reader as he searches for a paragraph meaning, or the paragraph meaning can influence individual word meanings. Huey (1908) writes:

> With first incipient thought of a word's isolated utterance there is . . . a suggestion of its meaning . . . and more or less of the word's significance is . . . felt with this or immediately thereafter. . . . Indeed there seems to be a flash of the relation of this meaning to the preceding context-meaning. . . . The total meaning . . . has begun to realize itself [pp. 168-169].

Gray (1952) notes:

> Meaning associations . . . are fused into a chain or pattern of ideas. . . . The reader may encounter new words or discover that meanings previously associated with certain words do not fit into the present context. . . . He searches . . . for the specific meanings implied by the passage [p. 10].

Context is a series of <u>interrelated</u> words, requiring that each meaning be given a weight or force in relation to the other meanings, with the reader selecting that which suits his purpose (Thorndike, 1917). The role of context as an interrelationship constituting the dynamics of series of meanings is labeled by Richards (1936) as "interanimation" or interpenetration.

As Gray (1952) suggested earlier, interaction of meaning can move even beyond words, to the reader himself (Goodman, 1967), becoming

> an interaction between thought and language . . . involving partial use of available minimal language cues selected from perceptual input on the basis of the reader's expectation . . . [pp. 126-127].

Meaning of a passage, then, is dependent on its own textual content and on the larger context in which it appears. Words are influenced by surrounding words, through interaction with each other and with the reader. The context frequently supplies clues to the meaning which it has itself established. While the concept of context may sometimes be broad, as when one includes the reader's past experiences with a word, nevertheless, as Zahner (1940) notes, "the 'verbal context' is . . . the clue to the present situation [p. 91]."

Classifications of Context Clues

Because in order to read it is necessary to get meaning from a context, investigators have attempted to categorize those elements in the context that provide clues to meaning.

Most classifications of context clues have been based on what writers ought to provide the reader (Harris, 1940) or on what clues are believed to exist in written passages (Artley, 1943; Deighton, 1963; Dulin, 1970;

Goodman, 1965; McCullough, 1943, 1945, 1958; Seibert, 1945). However, Ames (1966) and later Quealy (1969), who used Ames's scheme, relied on introspection to develop a chart of context clues. Rather than identify clues and then examine students' use of these signs as previous studies had done, Ames developed his classification of aids from what students themselves said they used as clues to meaning.

Goodman (1965) makes general divisions in classifying clue systems; in addition to elements within words hemselves (i.e., configuration and sight words) are clues he identifies (a) in language, (b) external to language, and (c) within the reader. Prior and subsequent classifications of others appear to fit into these three main areas, although unquestionably there is some overlapping and some ambiguity, as different writers may identify essentially the same clue in dissimilar ways. Nevertheless, in Table 1 are general categories which have been used by other classifiers of context clues.

No clear trend or chronological pattern to classification of clues emerges, except that similes-metaphors and roots-affixes are not found in current descriptions. Otherwise, the old categories survive, with some additional areas of language patterns and structure. Most often classified are Definition, Synonym, Comparison-Contrast, and

TABLE 1

CONTEXT CLUE CLASSIFICATION

External to Language

Typographical, footnotes, parentheses
(Artley, 1943; Dulin, 1970; Harris, 1940)

Pictorial Illustrations, Charts, Graphs
(Artley, 1943; Goodman, 1965; Harris, 1940; McCullough, 1958)

In Language

Word Elements: roots, prefixes, suffixes
(Artley, 1943)

Signal Words
(Artley, 1943; Deighton, 1959)

Familiar Expressions
(Ames, 1966; McCullough, 1943, 1945, 1958; Seibert, 1945)

Definition and/or Direct Explanation
(Ames, 1966; Artley, 1943; Deighton, 1959; Dulin, 1970; Harris, 1940; McCullough, 1945, 1958; Seibert, 1945)

Simile and Metaphor
(Artley, 1943; Harris, 1940)

Synonyms
(Ames, 1966; Artley, 1943; Dulin, 1970; Harris, 1940; McCullough, 1943, 1945, 1958; Seibert, 1945)

Compare and Contrast
(Ames, 1966; Dulin, 1970; Harris, 1940; McCullough, 1943, 1945, 1958; Seibert, 1945)

Summary
(McCullough, 1943, 1945, 1958)

(continued)

TABLE 1 (continued)

Appositive Phrase
(Ames, 1966; Artley, 1943; Dulin, 1970)

Modifying Phrases and Clauses
(Ames, 1966; Artley, 1943)

Language Patterns: sentence and paragraph
(Ames, 1966; Goodman, 1965; Seibert, 1945)

Tone and Mood
(Ames, 1966; Artley, 1943; Dulin, 1970; McCullough, 1943, 1945, 1958)

Inference
(Ames, 1966; Artley, 1943; Dulin, 1970; Seibert, 1945)

Combination
(Dulin, 1970; McCullough, 1943)

Within Reader

Background of Experience
(Ames, 1966; Artley, 1943; Goodman, 1965; McCullough, 1943, 1945, 1958; Seibert, 1945)

Background of Experience. Either authors' writings contain essentially the same clues today as in the 1940's or there are not many new-found clues (with the exception of linguistic elements). Perhaps classifications remain merely because no one has changed them to any extent.

Much was written in the area of context clues in the 1940's (Artley, 1943; Harris, 1940; McCullough, 1943, 1945, 1958; Seibert, 1945); the only one besides McCullough to enter the area in the 1950's was Deighton in 1959 (Deighton, 1963), and his reactions to clues were largely negative except for recognizing the importance of signal words. But in the late 1960's and in 1970 there appeared much activity (Ames, 1966, 1970; Dulin, 1970; Goodman, 1965; Quealy, 1969).

The need for more investigations to determine which of these clues to teach is acknowledged by Ames (1970), so that teaching will not be of clues already successfully mastered or of those which seldom appear in writing. While Ames advises making students aware of the power of context, he urges caution in using present clue classifications as absolute criteria in assessing use of aids.

Inference, the categorized element used in this study, would appear to fit into the In Language area. Yet a reader's background of experience (Within Reader)

would certainly influence his inference pattern. Inference could actually be a catchall term for most of the In Language and Within Reader categories used, for passages in this study may rely on tone and mood, for example, to enable the reader to infer a meaning. Similarly, ideas to compare and contrast and signal words to guide passage organization could be considered inference aids. To grasp any meaning not explicitly stated in a context requires the reader to make deductions, or to infer.

Students' Use of Context

The literature clearly indicates that context influences meaning and frequently provides identifiable clues. This leads one to look for how much students really make use of such context aids.

Using context clues in the junior college is discussed by Edwards (1959), who points out the need for adequacy in this skill for this heterogeneous population, many of whom do not have a high degree of verbal skill. No studies of junior-college retarded readers' actual use of context are found in the literature. These students, it will be recalled, are low in reading ability and are older readers. Therefore, three studies of low-level readers (elementary- and intermediate-grade children) are followed by two studies of older readers (college freshmen) to show findings of various investigations of use

of context clues.

A study by Elivian (1938) examined the ability of sixth-grade children to get the meaning of 73 difficult sixth-grade words written into four separate stories. Each stimulus word was defined in the context by direct definition, by synonym, and by inference, or repetition, throughout each story. Elivian found that the group did not have much ability in using the definition clue provided in the context.

Gray and Holmes (1938), in their study of whether context can provide a full grasp of meaning, reached a similar conclusion; namely, that a specific context aid will not necessarily be used in each instance. Students in their study of specific word meanings read a passage that did not clarify meaning and then one where the context contained an appositional definition. Gray and Holmes concluded that clues in the context provided no guarantee that students would know specific word meanings.

On the other hand, Goodman (1965) suggests that elementary school children probably attempt to use context clues. In his study of first-, second-, and third-grade children, he compared word recognition on lists and then the same words in stories. He found that children could read many words in stories that were missed on

lists. Never was a word right on the list and missed in the story. Although children made mistakes because they were still relying heavily on individual word cues and were using language cues ineffectively, Goodman shows that they did try to use context to gain meaning.

Seibert (1945), who investigated context reading for a look at inferences and mental processes, reports that college freshmen could guess correctly 60 percent of word meanings, which enabled them to grasp paragraph meaning. She had students guess words which had been deleted from sentences and paragraphs. Students also received some preliminary training in guessing words from context. She concludes that context ability in one's native language does indeed exist. Seibert identifies the mental processes involved in using inference clues to get meaning from context, and some of these are pertinent to the present study: association of ideas, which includes clues in a setting and in sentences that are to follow; and use of deduction, which sometimes involves elimination, as well as use of clues found in the general meaning of the passage.

Gibbons (1940) might question context ability in one's native language, for she found that by the time students are college freshmen some use context clues, but with varying degrees of accuracy. Gibbons' study required

students to analyze different contexts in which four different words appeared. Within the context, for example, one word was a synonym, or the meaning was implied. Of the 234 students she tested, 48 percent were unable to use context for getting correct meanings. Gibbons states that one of the abilities on which context clue ability depends is the ability to infer meaning from context.

These are only a few of the many studies illustrating that investigators of low-level readers and older students reach no agreement on whether or not low-reading-level students and older individuals use context to ascertain meaning. All agree, though, that students in any group vary widely in their use of context. Whether junior-college retarded readers use context is debatable from the literature. Goodman (1965), because of his success with very low-level readers, and Seibert (1945), because of her belief in native-language ability to use context, would vote "yes." Elivian (1938) and Gray and Holmes (1938), after seeing low-level readers unable to use provided clues, and Gibbons (1940), after noting that nearly half of her older subjects could not use clues, would unquestionably vote "no." This points the way toward inquiry into the area with junior-college retarded readers.

In summary, then, examination of the literature indicates that word meanings are dependent on context and

context provides clues to meaning. Most of these categorized clues rely on the ability to make inferences, often classified as a separate clue itself.

How much students use inference to gain meaning probably varies with individual readers; it certainly varies with their investigators. Two studies, one with low-level readers and one with college-level students, suggest that students do use context. Three studies, two with low-level readers and one with college freshmen, say that context generally is not used. Evident in all of these studies is the diversity in use of context at all levels, which is not surprising since individuals and their reading abilities vary widely within any group. Because better readers use more reading skills, context being one of them, it is logical that better readers are better users of context. Hence, if reading level increases with age, older pupils should be more proficient than younger ones. Proficiency aside, however, Goodman (1965) suggests that young children do use context. This study examined whether or not another group of low-level readers, those in junior college whose reading levels did not increase with their ages, use context to gain meaning.

This study resembled Goodman's (1965) in the word-alone and word-in-context design. Seibert's (1945) is

also particularly relevant because, like hers, this study demanded the skills required for making inferences.

CHAPTER III

PROCEDURE

To determine whether or not junior-college retarded readers use context clues, one group of these readers saw a list of words in isolation and the other group saw the same words in a passage. The difference between the mean scores of the two groups in the number of words correctly identified was computed to see whether or not there was any significant difference between the two groups.

In other words, a significantly higher score for the word-in-context group would suggest that junior-college retarded readers did use context to gain meaning. No significant difference, or a significantly higher score for the word-alone group, would suggest that the students did not use context, or perhaps misused it.

Subjects

Participating in this study were students enrolled in reading and writing courses of the academic skills lab of Mercer County Community College in Trenton, New Jersey. The college is a 2-year, publicly supported coeducational institution, classified as a 2-year community college.

Two criteria were established for selection of students for the study: first, that they be currently enrolled in the lab; and second, that their reading level be at least 5.0 grade level. The first obviously insured availability of students for testing, and the second provided some assurance that students could read the passages in the context test.

Minimum reading level was determined by checking lab scores on the Gates-MacGinitie Silent Reading Test, scores of vocabulary and comprehension. Even though a few scores were not recent ones, they could point out those students who might not be able to read the passages. It is possible, of course, that some students, those who may have improved their scores since they were tested and who could have read the passages, were not included in the population sample. No student reading much beyond 10.0 grade level remains in the lab; hence, total reading scores (vocabulary and comprehension) were between 5.0 and 11.0.

Forty-two day and evening students (13 males and 29 females) reading above 5.0 grade level actually participated in the study, 21 each in the word-in-context group and the word-in-isolation group. Ages ranged from 18 to 51, with a mean age of 26.4. No I.Q. scores were available for the students. These 42 students meeting the

stated criteria were randomly assigned to groups as they came to the lab. It should be added that attendance in the lab is voluntary.

Tests

In order to determine whether these students use context to get word meaning, it was essential that a test be used where word meanings were dependent on a passage; in other words, the same word in different context would have a quite different meaning.

Passages used in this study were originally developed by Davis (1944a, 1944b) to investigate the thinking processes involved in basic reading comprehension skills. Davis used the passages with high-school students. Selections from among abbreviated versions of these passages were made (1) subjectively, or on the basis of what was felt could be read without too much difficulty by low-reading-level students; and (2) on the basis of correct responses of the students originally taking the test, i.e., easy items. All passages required what Davis (1944b) calls "the ability to determine from the context the meaning of an unfamiliar word that is most appropriate in its contextual setting [p. 185]." This, it seems, is a reasoning process demanding inference on the part of the reader from the context surrounding the unknown word.

The purpose of the multiple-choice word-in-isolation

test was to establish unfamiliarity with a specific word meaning. Stimulus words were the same as in the context test and the correct responses were the same. These correct answers had to be reasonably defensible without the context of a passage and have distracters that were clearly not defensible. If students did not know a word in a list, but did know it in context, it could be reasonably assumed that context was being used to get the word meaning. Both tests may be found in Appendix A.

Trial Tests

Two 15-item trial tests, one consisting of passages and the other of words, were given to 17 eighth-grade students, ages 12 to 14, mean age 13.4, in a classroom situation. Context was definitely victorious over word-in-isolation in Items 2, 5, 6, 11, 12, and 13. Isolation won out over context in Items 14 and 15 (see Table 2).

The total correct responses are also shown in Table 2. For the word-in-isolation group, of a total of 120 possible correct responses, there were 61 correct, for a percentage of 50.8. For the word-in-context test, of a total of 135 possible correct responses, there were 83 correct, for a percentage of 61.5.

Both tests appeared to be satisfactory measures, with the items generally acceptable in range of difficulty,

TABLE 2

TRIAL TEST NUMBER AND PERCENTAGES OF CORRECT RESPONSES TO INDIVIDUAL ITEMS AND TOTAL CORRECT RESPONSES FOR GROUPS A AND B

Item number	Word-in-context (Group A) (n = 9)		Word-in-isolation (Group B) (n = 8)	
	Number correct	Percentage	Number correct	Percentage
1	6	66.6	5	62.5
2	8	88.8	3	37.5
3	8	88.8	8	100.0
4	5	55.5	5	62.5
5	5	55.5	1	12.5
6	5	55.5	2	25.0
7	8	88.8	8	100.0
8	0	00.0	1	12.5
9	2	22.2	3	37.5
10	4	44.4	4	50.0
11	8	88.8	4	50.0
12	8	88.8	1	12.5
13	7	77.7	2	25.0
14	4	44.4	7	87.5
15	5	55.5	7	87.5
	Total correct possible	135	Total correct possible	120
	Total correct	83	Total correct	61
	Percentage correct	61.5	Percentage correct	50.8

except for Items 8 and 9. These were eliminated from the final tests, along with Item 2, as this keyed response on the isolation test was not clearly defensible (not a dictionary definition). Copies of the context and word tests used in the trial examination may be found in Appendix B.

The trial testing provided a useful estimate of the acceptability of items on both context and word tests. Understood was the probability that since the tests were not excessively easy for eighth-grade non-retarded readers, even with the removal of two decidedly difficult items and one non-defensible item, they would prove difficult for lower-level readers. It was felt that some items of the tests were difficult enough to be discriminating and others were easy enough to allow correct responses.

Administration of Tests

Two 12-item tests, one scoring getting word meaning from a context and the other identifying any of the specific word meanings already known, were given to 42 junior-college retarded readers while they attended their reading and writing classes. Six daytime and one evening class were involved. As students were working individually in these courses, no group situation existed for testing. Rather, each student in the experiment was given the assigned test by the investigator early in the class

period and asked to complete it and return it as soon as convenient, taking all the time needed and using no aid like a dictionary.

Treatment of Data

This study sought to establish whether or not there was any difference between word-in-context and word-in-isolation scores (word identification scores); that is, whether or not students gave meaning to more words in context than alone. It is interesting first to see whether any significant difference existed between the two randomly selected groups in reading ability. The difference between the mean vocabulary scores of the two groups was found. Then, to see whether the difference between the mean vocabulary score of Group A and the mean vocabulary score of Group B deviated significantly from zero to a *t* value was computed and used to enter a level of significance table. The same procedure was followed with mean comprehension scores to show any possible difference in ability between the two groups. Finally, mean word identification scores (R-W/4) were treated in the same manner to see whether any difference between the word identification mean scores of the two groups was statistically significant. Formulas are found in Davis (1964) (see Appendix D).

Correlation coefficients were computed to show

relationships between word identification scores and standardized vocabulary and comprehension scores for both Group A and Group B (Appendix D).

This chapter first discussed the subjects in this study, 42 junior-college retarded readers enrolled in a reading lab and reading above level 5.0, but below level 11.0. Then followed descriptions of the two tests used, one consisting of passages to measure the ability to recognize and assign meaning to words in context, and the other a multiple-choice vocabulary test to measure the ability to recognize the same words without any context. A trial run of the two tests with eighth-grade students and the final administration of the tests to the subjects of the study were next explained. Finally discussed was how the data were to be treated to determine whether or not there was a significant difference between the mean scores of the word-in-context and word-in-isolation groups. This difference would help to answer the question posed by this study: Do junior-college retarded readers use context clues to any significant degree?

CHAPTER IV

FINDINGS AND DISCUSSION

This study examined the frequency of responses of two randomly assigned groups of junior-college retarded readers to words in context and words alone, in an effort to determine whether or not these readers use context to gain meaning. A search of related literature revealed that there have not been any studies of junior-college retarded readers' use of inference from the context to grasp word meaning.

The procedures of the study were as follows: Preceding the actual study, a trial test for each group was administered to eighth-grade non-retarded readers, which proved useful in the adoption of the final test items. Then these word identification tests, one requiring the reader to assign specific meaning to words in context, and the other to words alone, were each given to one group of junior-college retarded readers. Before administering the word identification tests, any significant difference in reading abilities between the two groups was ascertained by determining mean vocabulary and mean comprehension standardized test scores for both groups and

subjecting each of these to a t test.

Then the frequency of correct responses on the word identification tests, with correction for guessing (R-W/4), determined mean scores for both groups. The two means were then compared to see whether or not there was any significant difference between them. To establish this, a value was computed and used to enter a level of significance table.

The hypotheses set forth in the study were that the context group would know a greater number of words and that there would be a significant difference between the two groups' word identification scores.

Presentation of Data

Data on the two groups, A and B, are found in Table 3 and Table 4. Subjects were classified by age, sex, Gates-MacGinitie vocabulary score, Gates-MacGinitie comprehension score, and word identification score. Roughly, the reading level of students described in Tables 3 and 4 was somewhere between 5.0 and 11.0 (average of vocabulary and comprehension scores). The purpose of this study was to determine whether or not junior-college retarded readers used context to any significant degree to gain word meaning. Vocabulary and comprehension mean scores of each group were pertinent in determining similarities between Group A and Group B in reading

TABLE 3

GROUP A JUNIOR-COLLEGE RETARDED READERS, WORD-IN-CONTEXT, BY SEX, AGE, GATES-MACGINITIE VOCABULARY AND COMPREHENSION SCORES AND WORD IDENTIFICATION SCORES

Subject No.[a]	Sex[b]	Age[c]	Vocabulary[d]	Comprehension[e]	Word identification (R-W/4)[f]
1	F	20	7.9	4.8	4.5
2	F	36	6.6	5.8	0.8
3	F	21	7.7	5.3	0.8
4	M	19	6.6	5.5	5.8
5	M	24	8.6	5.5	5.8
6	F	24	11.0	4.6	4.5
7	F	42	11.0	6.0	2.0
8	F	39	6.9	5.8	3.3
9	F	19	6.2	4.2	4.5
10	F	19	8.3	5.3	4.5
11	F	47	12.9	5.5	4.5
12	F	24	5.8	5.1	4.5
13	M	33	10.5	8.9	3.3
14	M	20	7.0	9.3	8.3
15	M	20	6.6	5.5	5.8
16	F	20	7.7	7.2	-0.8
17	F	36	5.5	5.1	2.0
18	F	23	9.5	6.2	0.8
19	M	20	10.1	8.6	8.3
20	F	20	6.2	5.5	3.0
21	M	18	8.6	7.2	8.3

[a] N = 21

[b] 7 male; 14 female

[c] Mean = 25.8; S.D. = 9.0

[d] Mean = 8.15; S.D. = 1.95

[e] Mean = 6.04; S.D. = 1.38

[f] Mean = 4.26; S.D. = 2.73

TABLE 4

GROUP B JUNIOR-COLLEGE RETARDED READERS, WORD-IN-ISOLATION, BY SEX, AGE, GATES-MACGINITIE VOCABULARY AND COMPREHENSION SCORES AND WORD IDENTIFICATION SCORES

Subject No.[a]	Sex[b]	Age[c]	Vocabulary[d]	Comprehension[e]	Word identification (R-W/4) f
1	F	51	7.3	4.1	2.0
2	M	24	6.2	4.5	2.0
3	M	19	4.1	7.2	0.8
4	F	18	6.6	6.5	2.0
5	F	34	8.6	5.5	2.0
6	F	27	4.9	6.0	4.5
7	F	35	8.6	5.3	5.8
8	F	39	7.9	3.7	3.3
9	F	23	9.5	4.3	9.5
10	F	26	6.9	4.1	3.3
11	F	36	4.9	5.3	7.0
12	M	22	8.6	3.7	7.0
13	F	33	11.5	5.3	5.8
14	M	18	12.9	8.0	7.0
15	M	19	8.9	5.3	5.8
16	F	19	12.2	7.6	2.0
17	F	23	8.9	8.0	4.7
18	M	25	8.6	12.9	9.5
19	F	19	6.2	7.8	3.3
20	F	35	7.7	7.6	4.5
21	F	18	5.8	6.0	0.8

[a] N = 21

[b] 6 male; 15 female

[c] Mean = 26.8; S.D. = 6.4

[d] Mean = 7.61; S.D. = 2.25

[e] Mean = 6.13; S = 1.99

[f] Mean = 4.40; S = 2.85

ability. Mean scores of the word identification tests showed whether or not context of a passage was used to identify unknown words.

The predominance of females (14 in Group A and 15 in Group B) over males (7 in A and 6 in B) is interesting. This suggests that either there were simply more females enrolled in the skills lab, or more females in the lab were reading above the 5.0 level and were thus included in the study. The wide range in age in both groups is evident from the tables, with Group A's mean age 25.8, standard deviation 9.0, and Group B's mean age 26.8, standard deviation 6.4.

The mean vocabulary score for Group A was 8.15, with a standard deviation of 1.95, and for Group B was 7.61, standard deviation 2.25. The mean comprehension score for Group A was 6.04, with a standard deviation of 1.38, and for Group B was 6.13, standard deviation 1.99. The mean word identification test score (R-W/4) for Group A was 4.26, with a standard deviation of 2.73, and for Group B was 4.40, standard deviation 2.85.

The data, then, show that Group A was somewhat younger, with more variations in age, and had a slightly higher vocabulary score, slightly lower comprehension score, and a slightly lower word identification score than Group B. None of the mean score differences were

statistically significant. Statistical computations are found in Appendix D.

Additional information on word identification scores is shown by the number of actual correct responses to seeing words in context (Group A) and seeing words in isolation (Group B). Numbers and percentages of actual correct responses for both groups for the twelve items, individually and totally, are presented in Table 5. The reader is referred to Appendix A to examine any specific item numbered in the table.

Three items showing strong indication that context was used successfully include Item 7, where only 28.6 percent knew the word alone while 42.9 knew it in context; and Items 8 and 9, which were correctly identified by only 33.3 percent of the isolation group but by 76.2 and 57.1 percent of the word-in-context group.

The word-in-isolation group scored definitely higher on six items, easy Items 2, 3, 6, and 11; moderately difficult Item 5; and difficult Item 10. This would suggest, since the students knew these words alone --over 70 percent knew the four easy items without any context--that either the context served to confuse or mislead them, or they were unable to select a precise meaning from among choices close in meaning.

Two items showed only slightly higher scores one

TABLE 5

JUNIOR-COLLEGE RETARDED READERS' NUMBER AND PERCENTAGES OF CORRECT RESPONSES TO INDIVIDUAL ITEMS; AND TOTAL CORRECT RESPONSES FOR GROUPS A AND B

Item number	Word-in-context (Group A) (n = 21)		Word-in-isolation (Group B) (n = 21)	
	Number correct	Percentage	Number correct	Percentage
1	4	19.0	6	28.6
2	9	42.9	15	71.4
3	12	57.1	15	71.4
4	6	28.6	6	28.6
5	9	42.9	12	57.1
6	13	61.9	15	71.4
7	9	42.9	6	28.6
8	16	76.2	7	33.3
9	12	57.1	7	33.3
10	5	23.8	7	33.3
11	12	57.1	16	76.2
12	13	61.9	12	57.1
	Total correct possible	252	Total correct possible	252
	Total correct	120	Total correct	124
	Percentage correct	47.6	Percentage correct	49.2

way or the other, 1 and 12; scores for Item 4 were the same. Students evidently knew these words alone as well as in context; hence, whether the response depended on context is not shown by these items. Apparently the context here was not confusing.

The total number of actual correct responses possible for each group was 254. Group A made 120 correct responses, for a total of 47.6 percent correct on the context test. Group B answered 124 correctly, for a total of 49.2 percent correct on the word test. These figures are also in Table 5.

Examination of the test scores shows clearly that while these two randomly selected groups did not differ significantly in reading ability, the isolation Group B scored slightly higher than the context Group A on word identification tests.

A look at some of the responses actually selected by students is interesting. Itemized responses on the context test appear in Appendix C. In what way might the context have been confusing? Item 10, which asks for the meaning of "generous," referring to a dinosaur's mouth, received only five correct responses of "wide," but ten choices of "kindly." The author used the phrase "generous mouth" in place of "generous-sized mouth." Because students were unaware of the elimination of the word "-sized,"

they assigned an out-of-context meaning to "generous." Yet size references are found throughout the passage: "long thick tail . . . immense stomach . . . neck like a fat snake . . . a peanut-sized head . . . tiny eyes." The passage described the Brontosaurus as having "an expression at once shy and childishly eager and cheerful. His tiny eyes sparkled . . . and a smile caressed his generous mouth." Perhaps words such as "childishly" and "caressed" led readers to assign a gentle meaning to "generous." It is also possible, of course, that the readers simply reasoned that since generous people are frequently considered to be kind people, the same would apply to a dinosaur's mouth. Either the context actually misled with impressionistic words having a too-strong influence, or stereotyped meaning was given the word without reference to the actual context.

Item 2 asks for the meaning of "perform" after a passage which begins with the phrase "animal sounds," and continues with "a monkey . . . scream[s] with fright . . . [and] katydids make their monotonous music. . . ." The word "perform," referring then to tree toads, received eleven responses of "act," instead of the keyed response "make sounds." At first glance it seems that here students simply did not use the context. Yet a quick reference to Table 5 (p. 35) shows that in Group B 15 responded

correctly without any context at all. Perhaps because the passage mentioned stimulating animal sounds for recording --this last word "recording" may have led to the response "act," suggesting a more formalized presentation than just "make sounds." To "perform" would mean to "act" (on a stage or in a show), if the student did not consider the narrow quality of the act, which is to "make sounds." Perhaps students did not know that tree toads make sounds as their principal performance.

In Item 1, 13 students answered "valuing" instead of "experiencing" for the meaning of "appreciating" ("recognizing") in the passage. The interpretation "valuing" is possible from the context. "Appreciating" meaning "experiencing" leads into the latter part of the paragraph where the author describes why she was not "experiencing" loneliness, hence was happy; experiences are described. "Appreciating" meaning "valuing" suggests that loneliness was not valued by the author because it was commonplace with her. Group B did not do well on this word either (Table 5, p. 35)--maybe "appreciating" was simply a difficult word to read: confusing with other words, not phonetically regular, and totally abstract.

Other items that call for mention are Item 3, where five students thought that "motioned" meant "looked," which does not fit structurally because of "to the" and

what follows--if "to" became "at," "looked" could be defended; Item 4, where students did not know the phrase "in order" as "appropriate" and chose all distracters; Item 7, where students did not know the meaning of "air" as "tune" and selected all distracters about equally; and Item 5, where more students thought that "information . . . that bears on the . . . question" meant information that "supports" rather than "concerns"--"support" may be a more concrete word, though obviously it is imprecise in meaning and incorrect here.

Correlations among scores on the word identification test, Gates-MacGinitie vocabulary test, and Gates-MacGinitie comprehension test for Group A and the same relationships for Group B are shown in Table 6. While these must be interpreted cautiously because of the small number of subjects, it is nevertheless interesting to see how word identification scores for each group, context and isolation, compare when related to reading skills.

For both groups there was a higher correlation between word identification and vocabulary (0.77 and 0.82) than between word identification and comprehension (0.53 and 0.67). Correlations were higher for Group B, except for the correlation between the vocabulary and comprehension scores themselves; this correlation was higher for Group A. The relatively low correlation between the

TABLE 6

PRODUCT-MOMENT CORRELATION COEFFICIENTS AMONG VOCABULARY, COMPREHENSION, AND WORD IDENTIFICATION SCORES FOR GROUP A AND GROUP B

	Group A			Group B		
	Word identification	Vocabulary	Comprehension	Word identification	Vocabulary	Comprehension
Word identification	1.00	0.77	0.53	1.00	0.82	0.67
Vocabulary	0.77	1.00	0.99	0.82	1.00	0.84
Comprehension	0.53	0.99	1.00	0.67	0.84	1.00

context group's comprehension and word identification (0.53) is striking. The isolation group's higher correlation between word identification and vocabulary (0.82) than between word identification and comprehension (0.67) should also be pointed out.

Discussion

These findings, that a randomly assigned group of junior-college retarded readers did not use context to gain word meaning, did not agree with Goodman's (1965) work with low-level readers in elementary school grades one, two, and three. He found that low-level readers used context to get word meaning. It should be pointed out, however, that Goodman's study actually showed use of context in word recognition (decoding), rather than context relying on inference or deduction demonstrated in this study. Also, his study, while it may have included potential retarded readers, was not limited to such. In this study all subjects were retarded in reading. There may be some factor common to lack of development of reading skill and concomitant lack of growth in thinking or deduction skill that would explain the difference between young low-level readers and older low-level readers.

Results of this study did not support Seibert's (1945) findings with older students. Her correct responses were 60 percent, higher than the 47.6 percent found in

this study. Of course, Seibert's students, regular college freshmen, were undoubtedly better readers, certainly not all retarded readers as those in this study were. Seibert's theory of a native language ability to use context would not be supported by results of this study. These junior-college low-level readers were not using context; certainly they were not relying on actual reading ability since they were retarded in reading; therefore, since they failed to use context, evidently they did not possess a native language ability in inference making either. Perhaps this native language ability is the common factor suggested in the preceding paragraph. Goodman's young children had it--maybe young children do. This opens the area of why, if indeed young children have native language ability, some appear to lose it as they become older and retarded in reading.

Gibbons' (1940) study suggested that 48 percent of college students in her sample were unable to use context. The 47.6 percent of students responding correctly in this study left 52.4 percent unable to use context, rather close to Gibbons' report.

This study agrees with early, largely subjective studies of low-level readers (Elivian, 1938; Gray & Holmes, 1938), which found that generally children did not use context to gain word meaning. Unless most children used

context, these writers felt, like Gibbons, that use was inadequate.

Depending on one's point of view, one can determine the relative extent of usage of context in this study. The fact remains that 47.6 percent used the context, yet 49.2 percent used something other than context to gain word meaning, for the latter group correctly identified words without using any context. It is possible that the isolation group's higher word identification score could be attributed to some basic differences in intellect between the two groups. That there was no significant difference in vocabulary and comprehension as measured by a standardized reading test was established. While the differences were not statistically significant, the isolation group did score higher in comprehension but lower in vocabulary.

The fact that the words were known in isolation but unknown within a context leads one to examine comprehension abilities, for the passages where context failed must not have been fully understood.

Cautious interpretation of relationships among word identification, vocabulary, and comprehension suggest that the comprehension skills measured in a standardized reading test were not the same as those required to make inferences in getting word meanings from a context

(0.53). Further, vocabulary skills were probably used more by the isolation group than by the context group. Perhaps context confused vocabulary knowledge.

It is also possible that the context test was simply more difficult than the isolation test because it required more complex thinking processes (making inferences). Still, some items were easier for one group, some for the other, and a few were of approximately the same difficulty. The fact that the context test required more reading and more time, despite the clues to meaning offered, should be considered, since reading passages is more difficult for retarded readers than reading single words and multiple-choice definitions. Perhaps for these readers it is easier to find a meaning than a precise meaning, even when clues are present, for careful reading and thinking are required for precision.

Chapter IV has presented the findings of this study, which compared junior-college retarded readers' ability to give precise word meaning to words in context and to words alone. Data tables of both groups' age, sex, standardized vocabulary and comprehension scores, and word identification scores, along with percentages of actual correct responses to items on both tests, were presented and discussed. Also, relationships among word identification, vocabulary, and comprehension scores were

mentioned. The context group was slightly younger and had lower word identification and comprehension mean scores, but a slightly higher vocabulary mean score. Percentages of correct responses to items resulted in 47.6 percent correct for the context group and 49.2 percent for the isolation group. Correlations of word identification, vocabulary, and comprehension scores were higher for the isolation group than for context group; the lowest correlation was between reading comprehension and word identification for the context group.

Statistical computations to determine whether or not the differences between group mean scores were significant, not mere chance deviations from zero, estimated the difference between the groups' vocabulary, comprehension, and word identification mean scores to be not significant. The results indicated that students in this study did not use the context of a passage to gain word meaning.

How these findings related to studies with low-level readers and older readers was discussed because no other studies of junior-college retarded readers' use of context have been carried out. These results support findings of Elivian (1938), Gray and Holmes (1938), and Gibbons (1940).

Finally offered was some explanation for the

results of the study, which might include the students themselves and the testing instruments that were used.

CHAPTER V

SUMMARY AND SUGGESTIONS

This study has examined the responses of 42 junior-college retarded readers to words found within the context of a passage and to words in isolation. A search of the literature indicated that word meanings are dependent on context, and context provides clues to meaning, often requiring inference on the part of the reader. This investigation was a search for information about this particular reading skill, use of context to infer meaning, with regard to junior-college retarded readers. No studies of these students' use of context were found in the literature.

Summary

The question posed in the study was, do junior-college/adult retarded readers use context clues to any significant degree? To answer this question, students enrolled in reading and writing courses in a junior-college academic skills lab were randomly assigned to two groups, Group A, or the word-in-context group, and Group B, or the word-in-isolation group. No students enrolled in the lab reading above 10.8 grade level were in the

study. Students in the reading course reading below 5.0 level were not included in the study because of probable difficulty in reading the passages on the context test. Of the 42 students in the study, 13 were male and 24 were female; ages ranged from 18 to 51, with a mean age of 26.4.

Each group was given one 12-item multiple-choice test, either one consisting of passages containing specific words whose meanings could be inferred from the context, or one made up of a list of the same specific words, each word followed by multiple-choice answers. The same answer was keyed as correct on both tests. Tests were given to day and evening students, who worked individually in the lab, and they were given unlimited time to complete the tests.

The mean word score (R-W/4) for Group A was 4.26, standard deviation 2.73, and for Group B, 4.40, standard deviation 2.85. Group A was slightly younger than Group B, with a mean age of 25.8 compared with B's 26.8. Group A's mean vocabulary score was 8.15 and B's 7.61; A's mean comprehension score was 6.04 and B's 6.13. These differences were not statistically significant.

Group A answered 47.6 percent of the items correctly. Group B responded correctly to 49.2 percent of the questions. Three items were answered correctly with

greater frequency by Group A, six by Group B, and three about equally by both groups. Product-moment correlation coefficients for Group A showed the relationship between word identification and vocabulary to be 0.77; that between word identification and comprehension, 0.53; and that between vocabulary and comprehension, 0.99. Correlations for Group B showed the relationship between word identification and vocabulary to be 0.82; that between word identification and comprehension, 0.67; and that between vocabulary and comprehension, 0.84.

The difference between word identification mean scores for Group A and Group B was found to be not a significant difference, but rather was probably determined by chance factors. This was determined by computing a *t* value and entering a level of significance table. In other words, there was no significant difference between Group A's score on the context test and Group B's score on the isolation test.

This suggests that this group of junior-college retarded readers did not use context to gain word meaning, which is in keeping with findings of Elivian (1938) and Gray and Holmes (1938) with low-level readers, and with Gibbons (1940) with college freshmen.

The hypotheses set forth in Chapter I were that the context group would score higher than the isolation

group in word identification and that there would be a significant difference between the two groups. Both hypotheses were rejected.

Conclusions

The major finding of this study was that while 47.6 percent of the junior college retarded readers in this population sample used context to get word meaning, an even higher percentage (49.2) grasped word meaning without any context at all. There was no statistically significant difference between the two groups in reading ability as measured by standardized vocabulary and comprehension test scores. These junior-college low-level readers apparently lacked the ability to make inferences from a passage and consequently use context to gain specific word meaning.

Suggestions for Further Research

Questions for future study should include the following:

1. Does any pattern of emotional, physical, or intellectual disorder appear among those junior-college retarded readers scoring low in use of context?

2. What does analysis of errors among the group failing to use context reveal about thinking patterns of junior-college retarded readers?

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APPENDIX A

TESTS USED IN THE STUDY

Read each passage; then decide which choice is closest in meaning to the numbered word or phrase as it is used in the passage. Circle your answer.

As a little girl, I ran footloose on our sandy farm, not appreciating the loneliness of being an only child because I was my father's constant companion from the time I could tag along the furrows of a plowed field or hold up my tin pail for him to milk into.

1. "appreciating" (line 3)
   A valuing
   B experiencing
   C liking
   D developing
   E increasing

There are various ways to stimulate animal sounds for recording. Showing a monkey a live snake will make him scream with fright. Tree toads will perform if they hear someone sawing away on a piece of bronze--but that spoils the record. Katydids will make their monotonous music if they can hear other katydids making love in the distance.

2. "perform" (line 6)
   A dance
   B act
   C make love
   D make sounds
   E move around

As the procession neared the palace, the King signed to the first officer of the guard, who then rode up and saluted.

3. "signed" (line 2)
   A motioned
   B wrote
   C called
   D looked
   E pointed

That night I spent a good half hour at the dressing table. After what had happened in the afternoon, tears would have been in order, but I kept telling myself that red swollen eyes would only make me look worse.

4. "in order" (lines 5 and 6)
   A following
   B on schedule
   C inevitable
   D properly arranged
   E appropriate

Before writing anything in the exam book, I try to recall and organize in my mind all the information from the source materials I have read that bears on the first question. Then I do the same thing for the second question, and so on.

5. "bears on" (line 6)
   A pierces through
   B takes up
   C supports
   D concerns

Schooners are fore-and-aft rigged vessels--that is, their sails are slung from a gaff sticking out at one

side of the mast and are spread at the bottom by a boom. The gaffs and booms are secured in such a way that the sails may be turned fore, aft, or to one side.

6. "secured" (line 8)
   A protected
   B obtained
   C fastened
   D locked
   E made safe

In a Viennese museum was exhibited the piano used by Beethoven. An American girl walked casually toward it and ran off a careless air. Turning to the attendant, she asked whether there had not been great pianists to inspect the instrument. He replied that a short time ago Paderewski had made a pilgrimage to this shrine. "Paderewski!" said the girl. "Surely he must have played something beautiful on it." "On the contrary," responded the guard, "he did not feel worthy to touch it."

7. "air" (line 5)
   A draft
   B appearance
   C manner
   D attitude
   E tune

Anyone who weighs the evidence will conclude that the Bible is a unique book, which can be explained only as coming to us, through man, from the mind of an all-powerful, wise, and loving God.

8. "weighs" (line 1)
   A places on a scale
   B exactly balances
   C carefully considers
   D estimates
   E lifts

Rose and Leon walked slowly across the campus. Ever after she remembered the bright hues of the trees and the crackling of the leaves underfoot. Everything seemed exciting. Leon expected to enter the army in a few weeks. That gave deeper color to what he said.

9. "color" (line 10)
   A charm
   B strangeness
   C significance
   D thought
   E brilliance

The drawing showed the Brontosaurus with a long thick tail, an immense stomach, a neck like a fat snake, and topping all this off, a peanut-sized head. The awkward beast wore an expression at once shy and childishly eager and cheerful. His tiny eyes sparkled and a smile caressed his generous mouth.

10. "generous" (last line)
   A kindly
   B openhanded
   C wide
   D loose
   E gaping

Before the child has cut his first permanent teeth, he is ripe for the attentions of the orthopedist. His spine is distorted, his feet are flat, and his entire muscular tone, essential for erect posture, has been destroyed.

11. "ripe" (line 3)
   A spoiled
   B mature
   C mellow
   D ready
   E prepared

It wasn't enough for Mrs. Porter, our housekeeper, that having devised a schedule, she should maintain it. She had to be ahead of herself. "I can't abide things hanging over me," she used to say.

12. "abide" (line 6)
   A stay with
   B tolerate
   C wait for
   D get used to
   E stop

Select the word that most nearly means the same as the underlined word. Circle your answer.

1. appreciating
   A producing
   B experiencing
   C declining
   D initiating
   E appearing

2. perform
   A prefer
   B refuse
   C not move
   D make sounds
   E be silent

3. signed
   A motioned
   B ignored
   C sinned
   D weighed
   E exhaled

4. in order
   A remote
   B in tune with
   C delayed
   D disarrayed
   E appropriate

5. bears on
   A growls
   B dares
   C signals
   D concerns
   E listens

6. secured
   A prayed
   B succeeded
   C fastened
   D injured
   E scurried

7. air
   A ball
   B son
   C mistake
   D gun
   E tune

8. weighs
   A drops
   B gains
   C carefully considers
   D strengthens
   E moves precisely

9. color
   A faith
   B culture
   C significance
   D unit of heat
   E generalization

10. generous
   A selfish
   B simple
   C wide
   D common
   E garish

11. ripe
   A spoiled
   B gone to seed
   C raw
   D ready
   E common

12. abide
   A shorten
   B tolerate
   C rub off
   D rub on
   E wait

APPENDIX B

TRIAL TESTS

Read each passage; then decide which choice is closest in meaning to the numbered word or phrase as it is used in the passage. Circle your answer.

As a little girl, I ran footloose on our sandy farm, not appreciating the loneliness of being an only child because I was my father's constant companion from the time I could tag along the furrows of a plowed field or hold up my tin pail for him to milk into.

1. "appreciating" (line 3)
   A valuing
   B experiencing
   C liking
   D developing
   E increasing

As we walked down the hospital steps, I could see that Grandmother wasn't feeling her best. "Look," I said, "it's cold and you're tired. Let's try to get a bus and then"--
I felt in my pocket and found a few coins--"and then let's get some salami at the market." Grandmother loves salami.

"Do you think we could manage a bottle of beer?" she asked.

I felt the coins again. "I think so."

2. "manage" (line 14)
   A drink
   B enjoy
   C afford
   D carry
   E control

There are various ways to stimulate animal sounds for recording. Showing a monkey a live snake will make him scream with fright. Tree toads will perform if they hear someone sawing away on a piece of bronze--but that spoils the record. Katydids will make their monotonous music if they can hear other katydids making love in the distance.

3. "perform" (line 6)
   A dance
   B act
   C make love
   D make sounds
   E move around

As the procession neared the palace, the King signed to the first officer of the guard, who then rode up and saluted.

4. "signed" (line 2)
   A motioned
   B wrote
   C called
   D looked
   E pointed

That night I spent a good half hour at the dressing table. After what had happened in the afternoon, tears would have been in order, but I kept telling myself that red swollen eyes would only make me look worse.

5. "in order" (lines 5 and 6)
   A following
   B on schedule
   C inevitable
   D properly arranged
   E appropriate

Before writing anything in the exam book, I try to recall and organize in my mind all the information from the source materials I have read that bears on the first question. Then I do the same thing for the second question, and so on.

6. "bears on" (line 6)
   A pierces through
   B takes up
   C supports
   D concerns
   E presses down on

Schooners are fore-and-aft rigged vessels--that is, their sails are slung from a gaff sticking out at one side of the mast and are spread at the bottom by a boom. The gaffs and booms are secured in such a way that the sails may be turned fore, aft, or to one side.

7. "secured" (line 8)
   A protected
   B obtained
   C fastened
   D locked
   E made safe

Two months after his marriage to Maria, Mr. Haines was killed when, as she explained, he was struck on the head by a sausage grinder that fell from a shelf. It is idle to speculate whether the shelf had been jiggled. The coroner, although later he admitted "things looked a little queer, officially found that Haines died accidentally. Maria received his $4,000 life insurance.

8. "found" (line 12)
   A discovered
   B learned
   C understood
   D observed
   E ruled

The bandit chief has two rules. The first was: Never rob a man, unless by stealth, without killing him, and therefore, never rob with violence unless you can "take care of" the victim. His second rule was: Never leave a corpse where it will be found.

9. "take care of" (line 7)
   A murder
   B bribe
   C look out for
   D hide
   E watch over

In a Viennese museum was exhibited the piano used by Beethoven. An American girl walked casually toward it and ran off a careless air. Turning to the attendant, she asked whether there had not been great pianists to inspect the instrument. He replied that a short time ago Paderewski had made a pilgrimage to this shrine. "Paderewski!" said the girl. "Surely he must have played something beautiful on it."

"On the contrary," responded the guard, "he did not feel worthy to touch it."

10. "Air" (line 5)
   A draft
   B appearance
   C manner

D attitude
E tune

Anyone who weighs the evidence will conclude that the Bible is a unique book, which can be explained only as coming to us, through man, from the mind of an all-powerful, wise, and loving God.

11. "weighs" (line 1)
A places on a scale
B exactly balances
C carefully considers
D estimates
E lifts

Rose and Leon walked slowly across the campus. Ever after she remembered the bright hues of the trees and the crackling of the leaves underfoot. Everything seemed exciting. Leon expected to enter the army in a few weeks. That gave deeper color to what he said.

12. "color" (line 10)
A charm
B strangeness
C significance
D thought
E brilliance

The drawing showed the Brontosaurus with a long thick tail, an immense stomach, a neck like a fat snake, and topping all this off, a peanut-sized head. The awkward beast wore an expression at once shy and childishly eager and cheerful. His tiny eyes sparkled and a smile caressed his generous mouth.

13. "generous" (last line)
A kindly
B openhanded
C wide
D loose
E gaping

Before the child has cut his first permanent teeth, he is ripe for the attentions of the orthopedist. His spine is distorted, his feet are flat, and his entire muscular tone, essential for erect posture, has been destroyed.

14. "ripe" (line 3)
A spoiled
B mature
C mellow
D ready

It wasn't enough for Mrs. Porter, our housekeeper, that, having devised a schedule, she should maintain it. She had to be ahead of herself. "I can't abide things hanging over me," she used to say.

15. "abide" (line 7)
A stay with
B tolerate
C wait for
D get used to
E stop

Select the word that most nearly means the same as the underlined word. Circle your answer.

1. appreciating
   A producing
   B experiencing
   C declining
   D initiating
   E appearing

2. manage
   A soothe
   B mangle
   C afford
   D strike
   E damage

3. perform
   A prefer
   B refuse
   C not move
   D make sounds
   E be silent

4. signed
   A motioned
   B ignored
   C sinned
   D weighed
   E exhaled

5. in order
   A remote
   B in tune with
   C delayed
   D disarrayed
   E appropriate

6. bears on
   A growls
   B dares
   C signals
   D concerns
   E listens

7. secured
   A prayed
   B succeeded
   C fastened
   D injured
   E scurried

8. found
   A searched
   B lost
   C missed
   D knew
   E ruled

9. take care of
   A murder
   B debate
   C know
   D dislike
   E suspect

10. air
    A ball
    B son
    C mistake
    D gun
    E tune

11. weighs
    A drops
    B gains
    C carefully considers
    D strengthens
    E moves precisely

12. color
    A faith
    B culture
    C significance
    D unit of heat
    E generalization

13. generous
    A selfish
    B simple
    C wide
    D common
    E garish

14. ripe
    A spoiled
    B gone to seed
    C raw
    D ready
    E common

15. abide
    A shorten
    B tolerate
    C rub off
    D rub on
    E wait

APPENDIX C

CONTEXT TEST RESPONSES

Read each passage; then decide which choice is closest in meaning to the numbered word or phrase as it is used in the passage. Circle your answer.

As a little girl, I ran footloose on our sandy farm, not appreciating the loneliness of being an only child because I was my father's constant companion from the time I could tag along the furrows of a plowed field or hold up my tin pail for him to milk into.

1. "appreciating" (line 3)
13 A valuing
4 (B) experiencing
4 C liking
0 D developing
0 E increasing
0 F no answer

There are various ways to stimulate animal sounds for recording. Showing a monkey a live snake will make him scream with fright. Tree toads will perform if they hear someone sawing away on a piece of bronze--but that spoils the record. Katydids will make their monotonous music if they can hear other katydids making love in the distance.

2. "perform" (line 6)
0 A dance
11 B act
0 C make love
9 (D) make sounds
1 E move around
0 F no answer

As the procession neared the palace, the King signed to the first officer of the guard, who then rode up and saluted.

3. "signed" (line 2)
12 (A) motioned
3 B wrote
0 C called
5 D looked
1 E pointed
0 F no answer

That night I spent a good half hour at the dressing table. After what had happened in the afternoon, tears would have been in order, but I kept telling myself that red swollen eyes would only make me look worse.

4. "in order" (lines 5 and 6)
3 A following
1 B on schedule
4 C inevitable
6 D properly arranged
6 (E) appropriate
1 F no answer

Before writing anything in the exam book, I try to recall and organize in my mind all the information from the source materials I have read that bears on the first question. Then I do the same thing for the second question, and so on.

5. "bears on" (line 6)
1 A pierces through
0 B takes up
10 C supports
9 (D) concerns
1 E presses down on
0 F no answer

Schooners are fore-and-aft rigged vessels--that is,

their sails are slung from a gaff sticking out at one side of the mast and are spread at the bottom by a boom. The gaffs and booms are secured in such a way that the sails may be turned fore, aft, or to one side.

6. "secured" (line 8)
 3 A protected
 0 B obtained
13 © fastened
 2 D locked
 2 E made safe
 1 F no answer

In a Viennese museum was exhibited the piano used by Beethoven. An American girl walked casually toward it and ran off a careless air. Turning to the attendant, she asked whether there had not been great pianists to inspect the instrument. He replied that a short time ago Paderewski had made a pilgrimage to this shrine. "Paderewski!" said the girl. "Surely he must have played something beautiful on it."

"On the contrary," responded the guard, "he did not feel worthy to touch it."

7. "air" (line 5)
 2 A draft
 2 B appearance
 3 C manner
 4 D attitude
 9 Ⓔ tune
 1 F no answer

Anyone who weighs the evidence will conclude that the Bible is a unique book, which can be explained only as coming to us, through men, from the mind of an all-powerful, wise, and loving God.

8. "weighs" (line 1)
 3 A places on a scale
 1 B exactly balances
16 © carefully considers
 1 D estimates
 0 E lifts
 0 F no answer

Rose and Leon walked slowly across the campus. Ever after she remembered the bright hues of the trees and the crackling of the leaves underfoot. Everything seemed exciting. Leon expected to enter the army in a few weeks. That gave deeper color to what he said.

9. "color" (last line)
 5 A charm
 2 B strangeness
12 © significance
 1 D thought
 1 E brilliance
 0 F no answer

The drawing showed the Brontosaurus with a long thick tail, an immense stomach, a neck like a fat snake, and topping all this off, a peanut-sized head. The awkward beast wore an expression at once shy and childishly eager and cheerful. His tiny eyes sparkled and a smile caressed his generous mouth.

10. "generous" (last line)
10 A kindly
 2 B openhanded
 5 © wide
 2 D loose

1 E gaping
1 F no answer

Before the child has cut his first permanent teeth, he is ripe for the attentions of the orthopedist. His spine is distorted, his feet are flat, and his entire muscular tone, essential for erect posture, has been destroyed.

11. "ripe" (line 3)
0 A spoiled
3 B mature
1 C mellow
12 Ⓓ ready
5 E prepared
0 F no answer

It wasn't enough for Mrs. Porter, our housekeeper, that having devised a schedule, she should maintain it. She had to be ahead of herself. "I can't abide things hanging over me," she used to say.

12. "abide" (line 6)
2 A stay with
13 Ⓑ tolerate
1 C wait for
5 D get used to
0 E stop
0 F no answer

APPENDIX D

STATISTICAL COMPUTATIONS

Word Identification Scores*

Group A			Group B		
Subject	Word identification	Word identification^2	Subject	Word identification	Word identification^2
1	4.5	20.25	1	2.0	4.00
2	0.8	0.64	2	2.0	4.00
3	0.8	0.64	3	0.8	0.64
4	5.8	33.64	4	2.0	4.00
5	5.8	33.64	5	2.0	4.00
6	4.5	20.25	6	4.5	20.25
7	2.0	4.00	7	5.8	33.64
8	3.3	10.89	8	3.3	10.89
9	4.5	20.25	9	9.5	90.25
10	4.5	20.25	10	3.3	10.89
11	9.5	90.25	11	7.0	49.00
12	4.5	20.25	12	7.0	49.00
13	3.3	10.89	13	5.8	33.64
14	8.3	68.89	14	7.0	49.00
15	5.8	33.64	15	5.8	33.64
16	-0.8	0.64	16	2.0	40.00
17	2.0	4.00	17	4.7	22.09
18	0.8	0.64	18	9.5	90.25
19	8.3	68.89	19	3.3	10.89
20	3.0	9.00	20	4.5	20.25
21	8.3	68.89	21	0.8	0.64
N=21	Σ89.5	Σ540.43	N=21	Σ92.6	Σ580.96

Mn = 4.26

Mn = 4.40

$$S_A = \sqrt{\frac{\Sigma X^2}{N} - \left(\frac{\Sigma X}{N}\right)^2}$$

$$= \sqrt{\frac{540.43}{21} - 4.26^2}$$

$$= \sqrt{25.73 - 18.15}$$

$$= \sqrt{7.58}$$

$S_A = 2.73$

$$= \sqrt{\frac{580.96}{21} - 4.40^2}$$

$$= \sqrt{27.66 - 19.36}$$

$$= \sqrt{8.30}$$

$S_B = 2.85$

*R-W/4

Word Identification Scores t Test

$$\bar{A} = \frac{\Sigma R - W/4}{N} \qquad \bar{B} = \frac{\Sigma R - W/4}{N}$$

$$\bar{A} = 4.26 \qquad \bar{B} = 4.40$$

Hypothesis: $\bar{A} > \bar{B}$ rejected.

But is $\bar{B} > \bar{A}$?

$$t = \frac{\bar{B} - \bar{A}}{\sqrt{\frac{S_B^2}{N_B - 1} + \frac{S_A^2}{N_A - 1}}}$$

$$= \frac{4.40 - 4.26}{\sqrt{\frac{2.85^2}{20} + \frac{2.73^2}{20}}}$$

$$= \frac{0.14}{\sqrt{\frac{8.12}{20} + \frac{7.45}{20}}}$$

$$= \frac{0.14}{\sqrt{0.41 + 0.37}}$$

$$= \frac{0.14}{\sqrt{0.78}}$$

$$= \frac{0.14}{0.88}$$

$t = 0.16$ (not significant)

Vocabulary Scores

Subject	Group A Vocabulary	Group A Vocabulary^2	Subject	Group B Vocabulary	Group B Vocabulary^2
1	7.9	62.41	1	7.3	53.29
2	6.6	43.56	2	6.2	38.44
3	7.7	59.29	3	4.1	16.81
4	6.6	43.56	4	6.6	43.56
5	8.6	73.96	5	8.6	73.96
6	11.0	121.00	6	4.9	24.01
7	11.0	121.00	7	8.6	73.96
8	6.9	47.61	8	7.9	62.41
9	6.2	38.44	9	9.5	°0.25
10	8.3	68.89	10	6.9	47.61
11	12.9	166.41	11	4.9	24.01
12	5.8	33.64	12	8.6	73.96
13	10.5	110.25	13	4.5	20.25
14	7.0	49.00	14	12.9	166.41
15	6.6	43.56	15	8.9	79.21
16	7.7	59.29	16	12.2	148.84
17	5.5	30.25	17	8.9	79.21
18	9.5	90.25	18	8.6	73.96
19	10.1	102.01	19	6.2	38.44
20	6.2	38.44	20	7.7	59.29
21	8.6	73.96	21	5.8	33.64
N=21	Σ171.2	Σ1476.78	N=21	Σ159.8	Σ1321.52
Mn = 8.15			Mn = 7.61		

$$S_A = \sqrt{\frac{\Sigma X^2}{N} - \left(\frac{\Sigma X}{N}\right)^2}$$

$$= \sqrt{\frac{1476.78}{21} - 8.15^2}$$

$$= \sqrt{70.32 - 66.42}$$

$$= \sqrt{3.90}$$

$$S_A = 1.95$$

$$= \sqrt{\frac{1321.52}{21} - 7.61^2}$$

$$= \sqrt{62.93 - 57.41}$$

$$= \sqrt{5.02}$$

$$S_B = 2.25$$

Vocabulary Scores t Test

$$t = \frac{\bar{A} - \bar{B}}{\sqrt{\frac{S_A^2}{N_A - 1} + \frac{S_B^2}{N_B - 1}}}$$

$$= \frac{8.15 - 7.61}{\sqrt{\frac{3.80}{20} + \frac{4.95}{20}}}$$

$$= \frac{0.54}{\sqrt{0.19 + 0.25}}$$

$$= \frac{0.54}{\sqrt{0.44}}$$

$$= \frac{0.54}{0.66}$$

$t = 0.82$ (not significant)

Comprehension Scores

Subject	Group A Comprehension	Group A Comprehension^2	Subject	Group B Comprehension	Group B Comprehension^2
1	4.8	23.04	1	4.1	16.81
2	5.8	33.64	2	4.5	20.25
3	5.3	28.09	3	7.2	51.84
4	5.5	30.25	4	6.5	42.25
5	5.5	30.25	5	5.5	30.25
6	4.6	21.16	6	6.0	36.00
7	6.0	36.00	7	5.3	28.09
8	5.8	33.64	8	3.7	13.69
9	4.2	17.64	9	4.3	18.49
10	5.3	28.09	10	4.1	16.81
11	5.5	30.25	11	5.3	28.09
12	5.1	26.01	12	3.7	13.69
13	8.9	79.21	13	5.3	28.09
14	9.3	86.49	14	8.0	64.00
15	5.5	30.25	15	5.3	28.09
16	7.2	51.84	16	7.6	57.76
17	5.1	26.01	17	8.0	64.00
18	6.2	38.44	18	12.9	166.41
19	8.6	73.96	19	7.8	60.84
20	5.5	30.25	20	7.6	57.76
21	7.2	51.84	21	6.0	36.00
N=21	Σ126.9	Σ806.35	N=21	Σ128.7	Σ872.21
Mn = 6.04			Mn = 6.13		

$$S_A = \sqrt{\frac{\Sigma X^2}{N} - \left(\frac{\Sigma X}{N}\right)^2}$$

$$= \sqrt{\frac{806.35}{21} - 6.04^2} \qquad = \sqrt{\frac{872.21}{21} - 6.13^2}$$

$$= \sqrt{38.39 - 36.48} \qquad = \sqrt{41.53 - 37.57}$$

$$= \sqrt{1.91} \qquad = \sqrt{3.96}$$

$S_A = 1.38$ $S_B = 1.99$

Comprehension Scores t Test

$$t = \frac{\bar{A} - \bar{B}}{\sqrt{\frac{S_A^2}{N_A - 1} + \frac{S_B^2}{N_B - 1}}}$$

Since $\bar{B} > \bar{A}$, test:

$$\frac{\bar{B} - \bar{A}}{\sqrt{\frac{S_B^2}{N_B - 1} + \frac{S_A^2}{N_A - 1}}}$$

$$= \frac{6.13 - 6.04}{\sqrt{\frac{1.99}{20} + \frac{1.38}{20}}}$$

$$= \frac{0.09}{\sqrt{0.10 + 0.07}}$$

$$= \frac{0.09}{\sqrt{0.17}}$$

$$= \frac{0.09}{0.41}$$

$$= 0.22 \text{ (not significant)}$$

Age

Subject	Group A Age	Group A Age^2	Subject	Group B Age	Group B Age^2
1	20	400	1	51	2601
2	36	1296	2	24	576
3	21	441	3	19	361
4	19	361	4	18	324
5	24	576	5	34	1156
6	24	576	6	27	729
7	42	1764	7	35	1225
8	39	1521	8	39	1521
9	19	361	9	23	529
10	19	361	10	26	676
11	47	2209	11	36	1296
12	24	576	12	22	484
13	33	1089	13	33	1089
14	20	400	14	18	324
15	20	400	15	19	361
16	20	400	16	19	361
17	36	1296	17	23	529
18	23	529	18	25	625
19	20	400	19	19	361
20	20	400	20	35	1225
21	18	324	21	18	324
N=21	$\Sigma 544$	$\Sigma 15680$	N=21	$\Sigma 563$	$\Sigma 16677$

Mn = 25.8

Mn = 26.8

$$S_A = \sqrt{\frac{\Sigma X^2}{N} - \left(\frac{\Sigma X}{N}\right)^2}$$

$$= \sqrt{\frac{15680}{21} - 25.8^2}$$

$$= \sqrt{746.67 - 665.64}$$

$$= \sqrt{81.03}$$

$$S_A = 9.0$$

$$= \sqrt{\frac{16677}{21} - 26.8^2}$$

$$= \sqrt{760.81 - 718.24}$$

$$= \sqrt{41.57}$$

$$S_B = 6.4$$

Product-Moment Correlation Coefficients

$$r_{AB} = \frac{v_A + v_B - v_{(A-B)}}{2S_AS_B}$$

$$v = V\left(\frac{N}{N-1}\right)$$

$W.I._A$	S=2.73	V=7.58	v=7.95
$W.I._B$	S=2.85	V=8.30	v=8.63
$Vocab_A$	S=1.95	V=3.90	v=4.09
$Vocab_B$	S=2.25	V=5.02	v=5.25
$Comp_A$	S=1.38	V=1.91	v=2.01
$Comp_B$	S=1.99	V=3.61	v=3.79

Group A

Word identification and vocabulary

$$r = \frac{7.95 + 4.09 - 3.86}{2(2.73)(1.95)}$$

$$= \frac{8.18}{10.64}$$

$$r = 0.77$$

Word identification and comprehension

$$r = \frac{7.95 + 2.01 - 5.94}{2(2.73)(1.38)}$$

$$= \frac{5.02}{7.54}$$

$$r = 0.53$$

Vocabulary and comprehension

$$r = \frac{4.09 + 2.01 - 2.08}{2(1.95)(1.38)}$$

$$= \frac{4.02}{4.04}$$

$$r = 0.99$$

Group B

Word identification and vocabulary

$$r = \frac{8.63 + 5.25 - 3.38}{2(2.85)(2.25)}$$

$$= \frac{10.50}{12.82}$$

$$r = 0.82$$

Word identification and comprehension

$$r = \frac{8.63 + 3.79 - 4.84}{2(2.85)(1.99)}$$

$$= \frac{7.58}{11.34}$$

$$r = 0.67$$

Vocabulary and comprehension

$$r = \frac{5.25 + 3.79 - 1.46}{2(2.25)(1.99)}$$

$$= \frac{7.58}{8.96}$$

$$r = 0.84$$